SPACE SYSTEMS SYMPOSIUM (D1)
Innovative and Visionary Space Systems Concepts (1)

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A PROFIT ORIENTED ASTEROID BASED BUSINESS PLAN

Abstract

A number of enabling technologies must be implemented to transform space activities into a protable business structure and create a space-based economy. To implement human development of dierent bodies, even those with severe and hostile surface conditions, original technologies, connected with underground construction, must be developed. Since most of them are still under consideration, and at dierent stages of development, we want to dene a plan that can be implemented immediately with either currently available, despite its limitations, or near future technology, utilizing space resources, primarily as small as a 50 m diameter asteroid. The plan consists of several missions that can be summarized as each one progressing with incremental steps toward an improved technology and goals:

- Phase 1: Rendezvous, dock, install deection system, perform manufacturing activities "In Situ Resources Utilization" (ISRU) based.
- Phase 2: Deect asteroid in given trajectory (cyclical Earth-Moon).
- Phase 3: At earth proximity send equipment, including 3D printing to build facility with ISRU resources.
- Phase 4: Install spaceport and ensure Earth-Moon transportation with asteroid acting as cruiser and feeders at Earth and Moon proximity transferring pax and cargo.
- Phase 5: Install LOX manufacturing equipment and use station to launch and refuel trans-lunar missions.
- Phase 6: Equip station with facilities for passengers and cargo.
- Phase 7: Equip station with space debris collection, storage and transformation system, and equip station for retriever manufacturing and assembly.
- Phase 8: Start asteroid retrieval operations.
- Phase 9: Start a network of asteroid based activities in selected locations, including support for lunar mining activities (He 3, platinum, etc.).

With such sequence and other planned activities, a successful business plan, with low starting costs, could be implemented assuring fast and protable ROIs. In this paper, we describe such activities from the technical and economical point perspective as part of a logical and immediately feasible space–based business plan.